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|-------------------------------|----------------------|---------------|--|
| <b>Notice of Allowability</b> | Application No.      | Applicant(s)  |  |
|                               | 09/884,659           | HINMAN ET AL. |  |
|                               | Examiner             | Art Unit      |  |
|                               | Lawrence B. Williams | 2634          |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 14 April 2005.
2. ☒ The allowed claim(s) is/are 1, 3-9, 11-14, 16-21, 25-26, 29-30, renumbered as 1, 2-8, 9-12, 13-18, 19-20, 21-22, respectively.
3. ☒ The drawings filed on 20 June 2000 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

#### Attachment(s)

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|---|---|
| <ol style="list-style-type: none"> <li>1. <input type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br/>Paper No./Mail Date _____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</li> <li>6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date <u>2</u></li> <li>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other _____</li> </ol> |
|---|---|

**KENNETH VANDERPUYE**  
PRIMARY EXAMINER


### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Thomas Ferrill on 20 June 2005.

The application has been amended as follows:

a.) In claim 1, line 2 of the last paragraph, delete the word "amplified" after "signals" and insert the phrase "and amplified" after "inverted" in line 3 of the last paragraph..



KENNETH VANDERPUYE  
PRIMARY EXAMINER

### REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: The instant application discloses a system and method for improving DSL performance. A search of the prior art records has failed to disclose a system comprising; **an inverting amplifier** coupled to the upstream filter / amplifying equalizer for inverting the attenuated and amplified upstream DSL signals and passing the inverted DSL signals to the first hybrid" along with the remaining limitations of claim 1. Nor does the prior art teach a device for amplifying DSL signals on a local loop comprising; "a differential amplifier pair coupled to the downstream filter/amplifying equalizer for further amplifying downstream frequency band DSL signals received from the downstream filter/amplifying equalizer; and **an inverting amplifier** coupled to the upstream filter/amplifying equalizer for inverting upstream frequency band DSL signals received from the upstream filter / amplifying equalizer" as disclosed in claim 9. The prior art also fails to teach a loop extender comprising; "**an inverting amplifier** coupled to the upstream filter/amplifier equalizer for receiving attenuated and amplified upstream DSL signals from the upstream filter/amplifying equalizer and inverting the upstream frequency band components of the attenuated and amplified upstream frequency band components of the attenuated and amplified upstream DSL signals, the inverting amplifier being coupled to the upstream filter/ amplifying equalizer and the first hybrid, and wherein the first hybrid **differentially amplifies** the upstream frequency band components received from the inverting amplifier, and passes the differentially amplified upstream DSL signals to the local loop" as disclosed in claim 16. Nor does the prior art teach a method or means for improving DSL service a local loop, comprising; "**inverting** the amplified upstream DSL signal using an inverting amplifier; and **differentially amplifying** the

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inverted amplified upstream DSL signal using a first hybrid to further compensate for upstream DSL signal attenuation caused by the upstream DSL signal passing over the local loop; and passing the **differentially amplified** upstream DSL signal onto the local loop for transmission to a central office” as disclosed in claims 25 and 26 respectively. The prior art also fails to teach a device for amplifying DSL signals comprising; “ an **inverting amplifier** coupled to the upstream filter / amplifying equalizer for **inverting** upstream frequency band DSL signals received from the upstream filter / amplifying equalizer; a first hybrid coupled to the downstream filter / amplifying equalizer, the inverting amplifier, and the upstream filter / amplifying equalizer for coupling the downstream filter / amplifying equalizer, the inverting amplifier, and the upstream filter / amplifying equalizer to the local loop, wherein the first hybrid **differentially amplifies** the upstream frequency band DSL signals received from the inverting amplifier and the upstream filter / amplifying equalizer, and passes the differentially amplified upstream frequency band DSL signals to the local loop; and a second hybrid coupled to the upstream filter/ amplifying equalizer and the **differential amplifier** pair for coupling the upstream filter / amplifying equalizer and the differential amplifier pair to the local loop as disclosed in claims 29 and 30.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

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### CONCLUSION


2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams

lbw  
June 18, 2005



**KENNETH VANDERPUYE**  
**PRIMARY EXAMINER**